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Committee on the Peaceful Uses of Outer Space

Questions on suborbital flights for scientific missions and/or for human transportation

Note by the Secretariat

Addendum

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I. Introduction

1. At the fifty-third session of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, in 2014, the Working Group on the Definition and Delimitation of Outer Space agreed to continue to invite Member States of the United Nations and permanent observers of the Committee to provide their replies to the following questions (see A/AC.105/1067, annex II, para. 15 (c)):

(i) Is there a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space?

(ii) Will the legal definition of suborbital flights for scientific missions and/or for human transportation be practically useful for States and other actors with regard to space activities?

(iii) How could suborbital flights for scientific missions and/or for human transportation be defined?

(iv) Which legislation applies or could be applied to suborbital flights for scientific missions and/or for human transportation?

(v) How will the legal definition of suborbital flights for scientific missions and/or for human transportation impact the progressive development of space law?

(vi) Please propose other questions to be considered in the framework of the legal definition of suborbital flights for scientific missions and/or for human transportation.

2. The present document has been prepared by the Secretariat on the basis of replies received from member States and an international non-governmental organization having permanent observer status with the Committee.

II. Replies received from Member States

Cyprus

[Original: English]
[19 December 2014]

Question (i). A suborbital flight is a flight up to a very high altitude which does not involve sending the vehicle concerned into orbit. Therefore, there is a direct link between suborbital flights and the question of delimitation and definition of outer space.

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, states that a launching State is internationally liable for damage caused by an object launched into outer space. The Convention on International Liability for Damage Caused by Space Objects provides that a launching state "shall be absolutely liable to pay compensation for damage caused by its space object".

Therefore, a definition and delimitation of outer space might be of particular importance for States with space activities.

Question (ii). Yes, such a definition could be of practical use.

Question (iii). Air law and/or space law. However, the creation of a special regime that would apply to suborbital flights could possibly alleviate the current shortcomings and inconsistencies that may arise from the application of air and space law.

Question (iv). This will depend on the legal definition that is given to suborbital flights.

Question (v). Cyprus does not currently have any proposals to put forward.

Norway

[Original: English]
[17 November 2014]

Question (i). No. Suborbital sounding rockets sometimes have missions that go higher than the International Space Station and some satellites.

Question (ii). No new legislation should prohibit the type of scientific sounding rocket activity that is currently carried out in Norway.

Question (iii). Suborbital means going into space and returning to Earth, without going into orbit around the Earth.

Question (iv). There exists a Norwegian law regulating the launch of objects into space.

Question (v). No comments.

Question (vi). No comments.

Ukraine

[Original: English]
[10 December 2014]

Question (i). There is a relationship between suborbital flights for scientific missions and/or for human transportation and the definition and delimitation of outer space.

Question (ii). The legal definition of suborbital flights for scientific missions and/or for human transportation will be practically useful for States and other actors with regard to space activities.

Question (iii). The Government of Ukraine believes that it is necessary to discuss the issue of defining suborbital flights in the framework of the Committee on the Peaceful Uses of Outer Space and its Subcommittees, with the involvement of the International Civil Aviation Organization (ICAO).

Question (iv). It can be assumed that, depending on their purpose, suborbital flights can fall within the scope of either space or air law.

Question (v). For now, it is difficult to define the impact of the definition of suborbital flights on the progressive development of space law.

Question (vi). There are no additional questions for consideration.

III. Replies received from permanent observers of the Committee on the Peaceful Uses of Outer Space

Space Generation Advisory Council

[Original: English]
[1 December 2014]

Question (i). Yes. Establishing the relationship between suborbital flights and the definition and delimitation of outer space would serve as a building block for developing law governing space and air activities. It is important to define the delimitation of air and outer space in order to better understand the rights and abilities of commercial entities involved in suborbital flights, whether for human transportation or for purely scientific purposes.

There is currently a growing region around the Kármán line in which both aircraft and spacecraft can operate. The lower boundary is being extended by the lowest perigee at which spacecraft can travel, while the higher boundary is being pushed by the capability of aircraft to fly at higher altitudes, affecting the definition of outer space, which in turn impacts the regulation of suborbital flight.

In this regard, the relationship between suborbital flights for scientific and/or for human transportation and the delimitation and definition of outer space is at least twofold. Depending on the definition and delimitation of airspace and outer space, suborbital flights may infringe upon the airspace of a State, and thus its sovereignty. Furthermore, there are currently different regulatory mechanisms applied to missions conducted within airspace (e.g. the Convention on International Civil Aviation) and outer space (e.g. the Convention on Registration of Objects Launched into Outer Space).

Question (ii). Yes. The legal definition of suborbital flights for scientific missions and/or for human transportation will provide States and other actors with legal certainty about their related rights and obligations. It is important for the legal definition of suborbital flights to be considered and written from the perspective of not only States but also other actors, in order for it to realistically be practical and useful for all. Therefore, the legal definition should consider the perspectives of States and other actors (commercial and other entities relating to air and space activities), as well as national and international viewpoints, while still respecting international law regarding air and space activities.

Question (iii). The definition of suborbital flights should be based on the definitions of outer space and airspace, as well as of orbital flights. Orbital flights occur when outer space is reached and the spacecraft completes at least one orbit around the Earth with a velocity of at least 7.1 km/s. Therefore, the definition of suborbital flights would exclude orbital flights. Suborbital flights would take a suborbital trajectory, launched from and directly returning to Earth without

performing an orbit. The definition would therefore include flights which do not reach the orbital velocity necessary to maintain a sustained orbital flight for a given altitude.

It should be noted that any definition of suborbital flights should be flexible, given the frequent changes to technology; therefore, the definition of suborbital flights should be reviewed every five years.

With regard to the purpose of suborbital flights, a scientific mission could be defined differently from a human transportation flight and therefore needs further defining. Also under consideration should be the concepts of suborbital flights for tourism and non-human transportation. Flexibility and technical considerations should be the foundation of a definition for all suborbital flights regardless of their purpose.

Question (iv). Legislation relating to the following areas applies or could be applied:

(a) Space policy and law;

(b) Air policy and law;

(c) Additional international law and treaty law (e.g. law of the sea for potential modelling purposes, such as land/sea delimitation and sea launches).

All of the above should be applied from the perspective of States and other actors, as well as nationally, regionally and internationally. This includes the United Nations perspective, from the Committee on the Peaceful Uses of Outer Space and ICAO.

Question (v). The legal definition of suborbital flights for scientific missions and/or for human transportation will impact the progressive development of space law by:

(a) Helping to close the gap (cooperation and/or integration) between air and space legislation;

(b) Promoting the addition of commercial and private aspects/perspectives to space law;

(c) Resolving the question of definition and delimitation of space, which has been an open question since the 1950s, and the resolution of which could provide much-needed momentum in resolving other space law issues;

(d) Establishing clearer and more precise definitions of the concept of "astronaut", "space tourist" and "space object" (as compared with the existing definitions and laws regulating pilots, passengers, cargo and aircraft) in the context of the ongoing development of space law;

(e) Potentially having an impact on current or future national air and space law and policy.

Question (vi). The following additional questions could be understood to be answered at the national level and/or at the international level:

(a) In questions (i)-(v), why not ask about "scientific research missions", as opposed to "scientific missions", and why not ask about "paying human and/or

cargo transportation" opposed to "human transportation" for the additional clarity and commercial aspects?

(b) What kind of safety regulations are required for suborbital flights and how are they handled, as these flights could take place (nominally or in the case of uncontrolled trajectory) over the sovereign airspace of one or more country?

(c) For human transportation, how should the passengers be determined (medically screened and/or trained) and defined for suborbital flights? Are they "passengers", "astronauts", "space tourists" or something else?

(d) What rights would passengers or space tourists have as opposed to "space flight participants", as defined in the terminology of the 400 series of the Code of Regulations of the Office of Commercial Space Transportation of the Federal Aviation Administration (United States of America)?

(e) How would suborbital flights for human transportation be defined differently from suborbital flights for scientific missions? Would there be a difference at all?

(f) What is a space object?

(g) Should or can material retrieved during suborbital flights be regarded as the property of a natural person or an institution/company?

(h) Is human transportation different from space tourism?

(i) Could air passenger regulations apply to, or serve as an example for regulations concerning, suborbital flight passengers?

(j) Do these suborbital passengers need special training and/or health clearance to fly?

(k) Should suborbital flights also follow air regulations? Could there be an integrated set of regulations for these flights?

(l) Concerning non-human transportation and space tourism, should these aspects of suborbital flight be defined and considered legally?

(m) What laws apply for suborbital flights that might be launched from the sea or from international waters?